

スマイレ, ヒナスミレ, オクモジハグマ, タマブキ, ミヤコザサ, オオイトスゲ, ギョウジャニンニク, エンレイソウ, コバギボウシ, オオバジャノヒゲであった。

新北限地と証拠標本は次のとおりである。
岩手県大船渡市立根町細野沢。沢筋, カツラ・サワグルミ群落。Iwate Pref., Ôfunato-shi, Takkon-chô, Hosonozawa, alt. 200 m. 5 June

1996. Yutaka Sasaki 96-0713 (TUS 313321).

おわりに佐々木豊氏にお礼申し上げます。

引用文献

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Wen-Liang CHIOU and Shann-Jye MOORE: A History of Taxonomic Studies of the Vascular Plants of Taiwan

台湾の維管束植物研究史 (邱 文良, 牟 善傑)

Taiwan, with an area of 35,800 km², is located about 150 km off the southeastern coast of continental China and about 360 km north of Luzon (in the Philippines). It is about 394 km long north to south, with a width of 140 km at its broadest. The elevation ranges from 0 to 3,950 m. About two-thirds of the island is occupied by hills and mountains. Some small islands surround the main island, such as Orchid Island (Lanyu), Green Island (Lutao), Turtle Island (Kueishantao), Hsiaoiliuchiu, the Penghu Archipelago, and so on (Hsieh and Shen 1994).

There are 4,339 species (including infraspecies) of vascular plants known from Taiwan. These include 4,077 native and 262 naturalized species. Of these native plants, about 26.2 % are endemic to Taiwan (Hsieh 2003). Taxonomic studies of this abundant flora began in middle of the 19th century. Based on the governance status of this land, they can be divided into three periods, namely 1) a pioneering period, 2) a Japanese colonial period, and 3) a Taiwanese governance period.

1. Pioneering period (1854–1894)

Taiwan was governed by the Ching Dynasty during this period. In 1854, Robert

Fortune, a Brit, was possibly the first person to come to Taiwan to collect plants. During this period, at least 25 collectors were known to have visited Taiwan, including British, German, American, Japanese, and others (Bretschneider 1898). Some of them were amateur collectors. Most of them were British, and most collections were carried out on the plains and hills below an elevation of 1,000 m. Because of the transportation situation, they mostly collected plants in northern and southern parts of Taiwan. Most of those specimens are deposited in European herbaria.

Among the early collectors, Robert Swinhoe (1864) published *List of Plants from the Island of Formosa*, in which 246 species were recorded. This is possibly the first publication on Taiwanese plants. Augustine Henry (1896) published *A List of Plants from Formosa* and recorded 1,437 plants. He also pointed that 1) there were 103 endemic species which belonged to 79 genera, and the endemic species count should increase when surveys could be conducted in the high mountains; 2) besides the endemic species, other species were common to southern and central China and Japan; 3) plants in the lowlands were similar to those on the Indian plains; and 4) plants were less

related to those of the Philippines and Australia. However, probably because of insufficient collection from the southern tip of Taiwan, he did not discover the close relation between the floras of southern Taiwan and the Philippines. During 1886–1905, F. B. Forbes and W. B. Hemsley published *Index Florae Sinensis* in which about 2,000 seed plants were recorded. M. Kurita, possibly the first Japanese botanist to come to Taiwan, collected on the Hengchun Peninsula in 1874 (Yang and Peng 2002).

Most collections and surveys during this period were limited to the northern and southern parts of the main island, especially Tanshui at the northern tip of Taiwan, possibly because of difficulties traveling overland. Researchers visited Taiwan by ship and arrived in harbors of these two parts of Taiwan, because there were no good harbors on the west and east coasts at that time. All those studies were very important references for subsequent research.

2. Japanese colonial period (1895–1945)

During 1895 to 1945, the Japanese governed Taiwan. Many Japanese botanists came to Taiwan and collected specimens. This period can be divided into three sub-periods.

During the first sub-period, several Japanese botanists collected plants in Taiwan. Those specimens were mostly sent to the University of Tokyo. Using those materials, Prof. Matsumura published several articles, e. g., Matsumura 1897, 1898, 1901. In 1905, a botanical survey team was formed by the Japanese government and was led by Takiya Kawakami who recorded 2,199 native species (Kawakami 1910). Bunzo Hayata of the University of Tokyo examined the Taiwanese flora and published a series of *Icones Plantarum Formosanarum* and some other articles and recorded a total 3,658 species and 79 varieties (Matsumura and Hayata 1906, Hayata 1908, 1911–1921). He became

a professor in 1922. Most of the type specimens of the species published by Prof. Hayata were deposited in the herbarium of the University of Tokyo (TI), while a portion of the material was left in Taiwan and later placed in the herbarium of the Taiwan Forestry Research Institute (TAIF). Prof. Hayata did not designate the holotypes when he published those new species. In addition, some discrepancies between the label on the specimen sheet and the original protocol appear. These are now causing some confusion, especially as to judging the isotypes. Researchers at TI and TAIF are now working together and trying to make reasonable lectotypes. During this period, besides Japanese botanists, a French botanist and missionary, Père Urbain Faurie, came to Taiwan, collected numerous specimens, and sent them to herbaria of Europe, the United States, and Japan.

The second sub-period began with the establishment of the Department of Forestry (Government Research Institute) and its herbarium (TAIF), the present-day herbarium of TFRI. By that time, Ryoza Kanehira was in charge of the Forestry Department of Taiwan. Kanehira's studies were more concentrated on trees. *Formosan Trees*, written by Kanehira (1917, 1936) is the first publication covering the woody flora of Taiwan. Other publications such as *Supplementa Iconum Plantarum Formosanarum* (Yamamoto 1925–1932) and *List of Plants of Formosa* (Sasaki 1928) were also as important taxonomic studies. “A catalogue of the government herbarium”, in which 27,106 sheets of specimens in TAIF were registered and type specimens were recorded, was compiled by Syuniti Sasaki (1930), then-curator of TAIF.

The third sub-period began from the establishment of Taipei Imperial University (the present-day National Taiwan University). A herbarium (TAI) was built at the Department of Botany. Yushun Kudo ran the plant taxon-

omy and ecology laboratory and continued carrying out plant surveys, e. g., Kudo (1930, 1931). Later Genkei Masamune and Yoshimatsu Yamamoto followed, e. g., Masamune (1936, 1954). Not only general plant surveys but also monographs of specific taxa were conducted, e. g., S. Kitamura (Compositae), J. Ohwi (Cyperaceae and Gramineae), M. Tagawa (Pteridophyta), N. Fukuyama (Orchidaceae), and so on were some famous botanists at that time. During the World War II, Japanese botanical surveys extended to Micronesia, southern Asia, and Malaysia.

3. Taiwanese governance period (1946 to the present)

I. Chiang, W. F. Lin, and H. L. Li pioneered taxonomic studies during this period. D. Hou, H. Keng, T. S. Liu, Y. C. Liu, T. C. Huang, J. C. Liao, C. E. Chang, C. C. Hsu, C. E. DeVol, W. C. Shieh, and others continued those studies. A woody flora, illustrations, and many research articles were published, e. g., Liu (1960, 1962) and Li (1963). Six volumes of the *Flora of Taiwan* were later published (Li et al. 1975–1979). The second edition was issued during 1993–2003. To evoke more people's interest and increase their awareness, a Taiwanese version of the *Manual of Taiwan Vascular Plants*, in six volumes similar to the *Flora of Taiwan*, was published during 1997–2002. Currently a program to produce an electronic version of the *Flora of Taiwan* is being planned.

The above article is only a brief description. More detailed information, especially that on the period before 1946, can be obtained from *The Forgotten Japanese Botanists in Taiwan* (Wu 1997), *Plant Hunting in Formosa* (Wu 1999), and *Plant Hunting in Taiwan* (Wu 2003).

Endonote

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References

- Bretschneider E. 1898. History of European botanical discoveries in China. St. Petersburg. Vol. 1, pp. 1–624; Vol. 2, pp. 625–1167.
- Editorial Committee of the Flora of Taiwan, 2nd edition. 1993–2003. *Flora of Taiwan*. Vol. 1–6. Taipei: Editorial Committee of the Flora of Taiwan, 2nd edition. Vol. 1 (1994), 648 pp.; Vol. 2 (1996), 855 pp.; Vol. 3 (1993), 1084 pp.; Vol. 4 (1998), 855 pp.; Vol. 5 (2000), 1143 pp.; Vol. 6 (2003), 343 pp.
- Forbes F. B. and Hemsley W. B. 1886–1905. An enumeration of all the plants known from China proper, Formosa, Hainan, Corea, the Luchu Archipelago, and the Island of Honkong, together with their distribution and synonymy. *J. Linn. Soc. Bot.* **23**: 1–521, pls. 1–14 (1886–1888); **26**: 1–592 (1889–1902); **36**: 1–449 (1903–1905).
- Hayata B. 1908. *Flora of montana Formosae*. *J. Coll. Sci. Imperial Univ.* Vol. 25. 245 pp.
- 1911. *Materials for a flora of Formosa*. *J. Coll. Sci. Imperial Univ.* Vol. 30. 471 pp.
- 1911–1921. *Icones Plantarum Formosanarum*. Vol. 1–10. Vol. 1 (1911), 249 pp. + 40 pls.; Vol. 2 (1912), 156 pp. + 40 pls.; Vol. 3 (1913), 222 pp. + 35 pls.; Vol. 4 (1914), 264 pp. + 25 pls.; Vol. 5 (1915), 358 pp. + 17 pls.; Vol. 6 (1916), 168 pp. + 20 pls.; Vol. 7 (1918), 107 pp. + 14 pls.; Vol. 8 (1919), 164 pp. + 15 pls.; Vol. 9 (1920), 155 pp. + 12 pls.; Vol. 10 (1921), 235 pp. Bureau of Productive Industries, Taihoku.
- Henry A. 1896. A list of plants from Formosa, with some preliminary remarks on the geography, nature of the flora and economic botany of the island. *Trans. Asiat. Soc. Jpn.* **24** (Suppl.): 1–118.
- Hsieh C. F. 2003. Composition, endemism and phytogeographical affinities of the Taiwan Flora. In: Editorial Committee of the Flora of Taiwan, 2nd edition Vol. 1. pp. 1–14. Editorial Committee of the Flora of Taiwan, 2nd edition, Taipei.
- and Shen C. F. 1994. Introduction of the flora of Taiwan, 1: Geography, geology, climate, and soils. In: Editorial Committee of the Flora of Taiwan,

- 2nd edition (editors), Flora of Taiwan, 2nd edition. Vol. 1. Taipei: Editorial Committee of the Flora of Taiwan, 2nd edition. pp. 1–18.
- Kanehira R. 1917. Formosan trees. An account of trees, shrubs, bamboos, plants and trees ferns indigenous or commonly cultivated in Formosa. 648 pp. Bureau of Productive Industries, Taihoku.
- 1936. Formosan trees. Indigenous to the island (revised). 754 pp. Bureau of Productive Industries, Taihoku.
- Kudo Y. 1930–1931. Materials for a flora of Formosa. 1. J. Soc. Trop. Agric. 2: 145–150, 235–239; 3: 16–19, 110–112, 225–227, 386–391.
- Kurasono K. 1989. A list of Formosan collection sites [cites] appeared in the botanical literature before 1911. J. Jpn. Bot. 64: 18–31.
- Li H. L. 1963. Woody Flora of Taiwan. 974 pp. Livingston, Narberth.
- , Liu T. S., Huang T. C., Koyama T., DeVol C. E. (eds.). 1975–1979. Flora of Taiwan. Vols. 1–6. Vol. 1 (1976), 562 pp.; Vol. 2 (1976), 722 pp.; Vol. 3 (1977), 1000 pp.; Vol. 4 (1978), 994 pp.; Vol. (1978), 1166 pp.; Vol. 6 (1979), 665 pp. Epoch publishing, Taipei.
- Liu T. S. 1960. Illustrations of native and introduced ligneous plants of Taiwan. Vol. I. 702 pp. National Taiwan University, Taipei.
- 1962. Illustrations of native and introduced ligneous plants of Taiwan. Vol. II. pp 703–1388. National Taiwan University, Taipei.
- Manual of Taiwan Vascular Plants. 1997–2002. Vols. 1–6. Vol. 1, Kuo C. M. (ed.); Vol. 2, Yang Y. P., Liu H. Y., and Lu S. Y. (eds.); Vol. 3, Liu H. Y., Yang Y. P., Lu S. Y., and Shih B. L. (eds.); Vol. 4, Yang Y. P., Liu H. Y., Peng C. I., Shih B. L., and Lu S. Y. (eds.); Vol. 5, Yang Y. P., Liu H. Y., and Lin T. P. (eds.); Vol. 6, Yang Y. P., and Liu H. Y. (eds.) Council of Agriculture, Taipei.
- Masamune G. 1936. Short flora of Taiwan. 302 pp. The Editorial Department of Kudoa, Taihoku.
- 1954. A list of vascular plants of Taiwan. 172 + (21) pp.
- Matsumura J. 1897. Two new species of *Tricyrtis*. Bot. Mag. Tokyo 11: 78–79.
- 1898. Rhamnaceae Formosanae Liukiunenseaeque. Bot. Mag. Tokyo 12: 21–23.
- 1901. On *Alniphyllum*, a new genus of Styracaceae from Formosa. Bot. Mag. Tokyo 15: 67.
- and Hayata B. 1906. Enumeratio plantarum Formosanarum. J. Coll. Sci. Imperial Univ. Vol. 22. 641 pp.
- Sasaki S. 1928. List of plants of Formosa. I–XXVI, 1–8, 1–562.
- 1930. A catalogue of the government herbarium. 592 pp. Government Research Institute, Taihoku.
- Swinhoe R. 1864. List of plants from the island of Formosa. 4 pp.
- Tagawa M. 1935. A new species of *Adiantum* from Formosa. Acta Phytotax. Geobot. 5: 92–93.
- 1941. Osmundaceae of Formosa. J. Jpn. Bot. 17: 692–703.
- Wu Y. H. 1997. The Forgotten Japanese Botanists in Taiwan. 474 pp. Morning-Star, Taipei (in Chinese).
- 1999. Plant hunting in Formosa – a history of botanical exploration in Formosa in the nineteenth century. 205 pp. Morning-Star, Taipei (in Chinese).
- 2003. Plant hunting in Taiwan – a history of botanical exploration in Taiwan in the Japanese colonial Taiwan. 205 pp. Morning-Star, Taipei (in Chinese).
- Yamamoto Y. Y. 1925–1932. Supplementa Iconum Plantarum Formosanarum. 1: 1–147 (1925); 2: 1–40 (1926); 3: 1–48 (1928); 4: 1–28 (1928); 5: 1–47 (1932).
- Yang Y. P. and Peng C. I. 2002. The introduction of Taiwan plants. In: Yang Y. P. and Liu H. Y. (eds.), Manual of Taiwan Vascular Plants. 6: 1–8. Council of Agriculture, Taipei.

台湾の維管束植物の分類学的研究は19世紀中程にはじまった。研究は、その当時の統治者の違いにもとづいて3つの時代に分けることができる。

第1期草分期は、1854–1894年の間であり、ヨーロッパ人によって台湾植物相の記載研究が行われるが、大半はイギリス人であった。その当時に採集された標本は大部分がヨーロッパの標本館に収蔵される。

第2期日本統治期は、1895–1945年の間である。植物相は主に日本人植物学者により研究され、概要が掌握されただけでなく、一部の分類群では種族誌研究も行われた。この当時に採集された標本の大部分は日本の標本館に収蔵されるが、一部が台湾に残されている。

第3期は1946年以降の台湾政府による統治の時代であり、台湾の研究者により研究が続けられている。現在、台湾からは4,339種の維管束植物が知られているが、うち4,007種は自生種で262種は帰化種である。また26.2%は固有種である。Flora of Taiwan「台湾植物誌」は2版が出版された。現在、Flora of Taiwanの電子版が計画されている。

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